

## EXHIBIT I

Box PATENT

Attorney Docket No.: 701825-50008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICEIn re Application  
of:

Gerald BATIST et al.

For:

HEX II TUMOR-SPECIFIC PROMOTER AND USES  
THEREOF IN CANCER THERAPY

Serial No.:

09/275,005

Filing Date:

March 3, 1999

Examiner:

S. Chen

Group Art Unit:

1633

Assistant Commissioner for Patents  
Washington, DC 20231

U. S. Dept. of Commerce

DECLARATION OF GERALD BATISTI, the undersigned, GERALD BATIST, hereby declare  
and say that:1. I am a citizen of Canada, presently residing at 4670  
Grosvenor Street, Montreal, Quebec, Canada.2. I am the Director of Research of McGill University's  
Centre for Translational Research in Cancer, the owner  
of the above-identified patent application;3. My academic background and experience in the field of  
the present invention is outlined in the enclosed  
Curriculum Vitae.

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4. I am a co-inventor in the present application and have read and understand the specification thereof;
5. The following comments are evidence of the state of the art at the date of the invention of the present application:

#### The Prior Art

Mathupala et al. ((1995) J. Biol. Chem. 270, 16918-16925) reported the isolation and sequencing of the rat Hex II promoter from rapidly growing, highly glycolytic hepatoma cell line (AS-30D). In addition, Mathupala et al. reported enhanced promoter activity in the rat tumor cell line (AS-30D) as compared with transfected rat hepatocytes, in the presence of modulators of interest, i.e. glucose, insulin and glucagon. As discussed at page 16924, col. 2, Mathupala et al. suggest that the failure of the rat Hex II promoter to be activated in hepatocytes by the common modulators suggests that a different set or level of transcription factors may be involved in normal and transformed hepatocytes for controlling the expression of hexokinase isoforms and therefore the rate of glucose catabolism. As concluded on page 16925, the studies of Mathupala et al. suggest that differences in the regulation of hexokinase genes involved in glucose catabolism appear between normal versus tumor cells in rat.

Although increased levels of hexokinase type II isoform were noted in rat tumor cells as compared to rat normal cells, no evidence was presented to indicate that the rat Hex II promoter is in any way tumor specific. Mathupala et

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al. report a "difference in regulation" of hexokinase genes between normal and tumor rat cells. This reference does not explore the transformation of cells of other species with a construct including the rat Hex II promoter, nor does it suggest that a similar correlation, that is, a difference in the regulation of hexokinase genes between normal and tumor cells, would be expected.

It would not be obvious to a person of ordinary skill in the art, at the time the present invention was made, to expect tumor specific activity of a rat Hex II promoter in human cells, based on a reported "difference" in regulation of hexokinase genes in rat tumor cells as compared to rat normal cells.

Considerable experimentation was required to test the activity of a non-human promoter sequence in human cells. Based on the extensive experimentation employed in arriving at the present invention, as outlined in the detailed description of the invention portion of the present application at page 5, line 5 to page 11, line 8 and at pages 157-158 of the Katabi et al. reference submitted as Exhibit 1 with our response of December 20, 1999, it was determined that the rat Hex II promoter is activated in a variety of transformed human tumor cell lines and not in non-transformed normal human cells. For example, our experimentation included studying the gene construct of the present application in vitro in non-small lung carcinoma H561 and H460 cell lines, human mammary carcinoma MCF-7 cell line and in vivo in a mouse mammary carcinoma model and human lung carcinoma model where NCI-H561 cells were grown

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as a subcutaneous tumor in nude mice. As a result, we arrived at the surprising and unexpected conclusion that the activity of rat Hex II promoter is in fact tumor specific in human cells.

In accordance with the present invention, we have determined that the rat Hex II promoter exhibits tumor specificity in human tumor cells as well as in rat cells, and provide evidence that this promoter may be effectively utilized in a therapeutic manner, in both animal and human models. Based on this finding, it may also be used in experimental research on human and animal tumor cells in the laboratory. Accordingly, the present invention provides a new and unobvious tumor-specific gene construct comprising a rat Hex II promoter in a suitable vector wherein the promoter is selectively regulated in tumor cells as compared to normal cells, and a related method for tumor-selective expression of a gene. Based on this inventive feature, that the claimed gene construct is tumor-specific, all subsequently dependant constructs and methods are also believed to have patentable merit over the teachings of the prior art.

Presentation of our findings that the rat Hex II promoter showed cross-species tumor cell specificity, was received with enthusiasm by the scientific community. Despite previous teachings of increased hexokinase gene expression in tumor cells, and the sequencing of the rat Hex II promoter, our finding that the rat Hex II promoter is tumor cell specific was a surprising and unexpected result.

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As a result, the therapeutic and experimental utility of this promoter in both animal and human cells was evident.

Particularly, previous findings reported that the Hex II gene is overexpressed in transformed rat hepatocytes on the basis of amplification of the Hex II gene in vitro. Therefore, it was not at all obvious at the time of the present invention that human or murine cancer cells, *in vivo*, would have increased levels of the transcription factors which result in enhanced expression of the Hex II promoter. This finding has been greeted by the scientific community with enthusiasm because of the potential utility of the tumor specific activity of the rat Hex II promoter in the areas of cancer research and treatment. In addition, this surprising observation suggests that the tumor selective activation of the rat Hex II promoter may lead to the identification of tumor factors that are responsible for this promoter activation, i.e. new cancer biology will be derived from this unexpected finding.

6. The following comments pertain to data submitted as Exhibit 2 with our response of December 20, 1999.

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Exhibit 2

The data previously provided to the Examiner as Exhibit 2 is indicative of the effectiveness of the tumor-specific gene construct of the present invention in achieving tumor-specific gene expression. As a result of the increased rat Hax II promoter activity of the gene constructs of the present invention, reduction in the volume of tumors "in vivo" was achieved. It is on the basis of these results that I believe that the claims of the present application to be fully enabled. Particularly, the data provided by way of Exhibit 2 describes recognized animal models illustrating the in vivo selectivity of the rat promoter in both human and animal tumor cells as compared to normal cells, respectively. In particular, the data presented in Exhibit 2 pertains to in vivo animal studies illustrative of a mouse mammary carcinoma model and a human lung carcinoma model, respectively. I believe that this data taken into consideration with the selectivity of the rat promoter in human tumor cells in vitro, as described at pages 7 - 9 of the present application, scientifically illustrates the potential in vivo utility of the present invention and fully enables the in vivo use of the tumor-specific gene construct as claimed in the present application.

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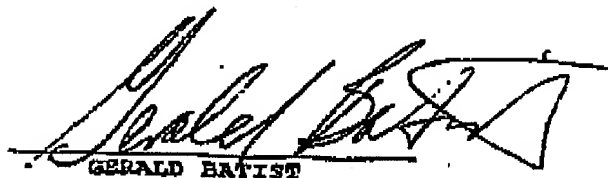
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7. I declare further that all statements made on information and belief are believed to be true, and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 in the United States Code and as such willful statements may jeopardize the validity of the instant patent specification or any patent issuing therefrom.

AND I HAVE SIGNED in Montreal, Quebec, Canada, this 15 day of September, 2000, in the presence of the undersigned witness.

  
Witness Signature

ANGELA FRAGONERE  
Witness Name (print)

  
GERALD BATIST

TOTAL P.28

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## GERALD BATIST CURRICULUM VITAE

### Home Address

4670 Grosvenor St.  
Montreal, Quebec  
H3W 2L8  
Tel.(514) 481-1542

### Business Address

McGill University Centre for  
Translational Research in Cancer  
Jewish General Hospital, Suite D-127  
3755 Cote St. Catherine Rd.  
Montreal, Quebec, H3T 1E2  
Tel: (514) 340-7915  
Fax: (514) 340-7916  
E-MAIL: Gbatist@ONC.JGH.McGill.CA



**PERSONAL DATA**

Date of Birth: June 10, 1952

Place: Montreal, Quebec, Canada

SIN: 234-396-364

Marital Status: Married with three children

**EDUCATION**

DEGREES: 1973 B.S. Columbia University  
1977 M.D., C.M. McGill University

**POST-GRADUATE TRAINING:**

1977-78	Internal Medicine Internship	St. Vincent's Hospital and Medical Centre, New York City
1978-79	Junior Medical Resident	New England Deaconess Hospital, Boston
1979-80	Senior Medical Resident	New England Deaconess Hospital, Boston
7-12/80	Chief Resident Physician	New England Deaconess Hospital, Boston
1-6/81	Clinical Research Fellow	Nutrition and Metabolism Laboratory, New England Deaconess Hospital, Harvard
1981-82	Clinical Staff Fellow	National Cancer Institute - Navy Oncology Branch, Bethesda, Maryland
1982-85	Visiting Associate	Clinical Pharmacology Branch, National Cancer Institute, Bethesda, Maryland
1982-84	Visiting Associate	Nutrition Support Service, Metabolism Section, Surgical Oncology Branch, NCI, Bethesda

PROFESSIONAL CERTIFICATION:

- 1977 Licenciata of Medical College of Canada
- 1981 American Board of Internal Medicine
- 1983 American Board of Internal Medicine, Medical Oncology
- 1985 Corporation Professionelles des Medicines du Quebec, Internal Medicine

**APPOINTMENTS**

UNIVERSITY:

- 1978-80 Clinical Fellow in Medicine, Harvard Medical School
- 1980-81 Clinical Instructor in Medicine, Harvard Medical School
- 1981-82 Instructor in Medicine, Uniformed Services University of the Health Sciences, Bethesda
- 1985-89 Assistant Professor, Department of Medicine, McGill University, Montreal
- 1990-94 Associate Professor (Tenure), Departments of Medicine and Oncology, McGill University
- 1985- Associate Member, Experimental Medicine Division, Department of Medicine, McGill University
- 1988- Associate Member, Centre for Epidemiology and Biostatistics, Montreal General Hospital
- 1987-97 Associate Member, McGill Cancer Centre
- 1997- Professor, McGill Cancer Centre
- 1985- Associate Member, McGill Nutrition and Food Sciences Centre
- 1989-91 Director, Experimental Therapeutics Section, Department of Oncology, McGill University

- 1992- Director, Phase I- Developmental Therapeutics, Department of Oncology, McGill University
- 1992- Associate member, Department of Pharmacology & Therapeutics, McGill
- 1994- Professor, Departments of Medicine and Oncology, McGill University
- 1996- Director, McGill University Centre for Translational Research in Cancer  
- The Centre was approved, and I was appointed its Director, by the University Board of Governors in the Spring of 1996. It was initiated with an endowment, and we have since added an additional \$1 million endowment, in addition to long-term commitments for trainees of over \$65,000 per year, plus further funds totalling over \$130,000 that have been distributed directly to researchers. The administrative structure and scientific membership are broadly representative of McGill scientists interested in this type of work, as well as appropriate colleagues from the Universite de Montreal.

#### HOSPITAL:

- 1985-90 Assistant Physician, Department of Medicine, Montreal General Hospital
- 1990- Associate Physician, Department of Medicine, Montreal General Hospital
- 1992- Associate Physician, Department of Medicine and Oncology, Jewish General Hospital
- 1992- Director, Experimental Pharmacology Program, Lady Davis Research Institute, Jewish General Hospital
- 1993-98 Director, Clinical Research Unit, Lady Davis Institute-Sir Mortimer B. Davis Jewish General Hospital  
- I was the first Director of the Clinical Research Unit, established in 1993. It has since treated over 500 patients participating in 50 protocols to date. It has received two successive Aoutstanding= ratings in external audits, in addition to a stringent Apre-FDA= audit, and has been included several times among a handful of pharmacokinetic study sites. I have successfully administered an average annual budget exceeding \$300,000.

## AWARDS

### PERSONAL AWARDS:

- 1975 Canada Research Council Student Summer Research Award
- 1976 McGill University Faculty of Medicine, Summer Research Award
- 1985-86 Montreal General Hospital Research Institute Foundation Award
- 1986-91 Scholar, Medical Research Council of Canada
- 1991-96 Fonds de la Recherche en Santé du Québec, Chercheur-Boursier Mérite Exceptionnel
- 1993- Elliott Osserman Award, Israel Cancer Research Fund
- 1993- Helen and Sam Steinberg Family Career Scientist Award in Oncology, McGill University
- 1994 Searle Distinguished Achievement Award, Canadian Society for Clinical Pharmacology
- 1996 James Tullis Lecture Award for Distinguished Research, Deaconess Hospital, Harvard Medical School

### NON-MEDICAL AWARDS:

- 1988 Montreal Hadassah-Wizo Organization, award for humanitarian efforts on behalf of Soviet cancer patients
- 1995 Establishment of Gerald Batist /Hillel Endowment Fund to support student society

## TEACHING

### 1. POSTDOCTORAL FELLOWS:

- a. 1989-93 Taiqi Wang, Supported by NCIC operating grant
- b. 1991-93 Marina Lewandowska-Skabek, Fulbright Scholar, supported by NCIC operating grant

- c. 1990-93 Nicole Brasseur, MRC Fellowship Award
- d. 1989-91 Moulay Alaoui-Jamali, NCIC operating grant. In 1991 appointed Assistant Professor of Medicine, McGill University
- e. 1993- 94 Gordon Kirby, MRC Fellowship Award. Canderel Fellowship Award (McGill Cancer Center), Assistant Prof. Guelph University, 1994

## 2. Ph.D. STUDENTS:

- a. 1986-90 Kamilia Mekhail-Ishak, Ph.D. awarded 1990, Experimental Medicine, McGill. 'Biochemical components of xenobiotic metabolism in human colon and in murine breast: relation to drug sensitivity'
- b. 1987-93 Robyn Schecter, Ph.D. awarded 1993 (Dean's Honour List) 'Mechanisms of tumor cell drug resistance: the role of glutathione S-transferase in mammary adenocarcinoma cells'
- c. 1993-99 Joseph Carrusso, current Ph.D. awarded in 1999, 'The aryl hydrocarbon receptor signal transduction pathway: mechanism and consequence of action in human mammary cells'
- d. 1994-95 Yvette Leloirier, M.S. student, Pharmacology, Université de Montréal
- e. 1994-99 Maha Katabi, Ph.D. awarded 1999, 'Transcriptional targeting of suicide genes in cancer gene therapy'
- f. 1994-99 Xiang Chen, Ph.D. Awarded 1999, 'Characterization of 5-oxo-L-prolinase in glutathione modulation and cancer chemotherapy'
- g. 1995- Nasser Fotoui-Ardakani, Experimental Medicine, McGill
- h. 1996- George Charystinos, Pharmacology & Therapeutics, McGill
- i. 1997- Carolyn Trudeau, Pharmacologie, Université de Montréal
- j. 1999- David Hamilton, Pharmacology & Therapeutics, McGill

3. CLINICAL INSTRUCTION:

- a. Ward Rounds with medical students, housestaff, oncology fellows, at least one month per year
- b. Victor Sandor, Resident in Internal Medicine (elective), Montreal General Hospital, spent 6 months in 1991 in Experimental Therapeutics, Department of Oncology, and worked on clinical and laboratory aspects of a phase I clinical trial. Appointed Assistant Professor, McGill, 1997.

4. SUMMER AND ELECTIVE STUDENTS IN LABORATORY:

- a. Nancy Hudson, Summer 1987-88 during medical school. Won faculty award for presentation of laboratory work, in addition to faculty bursary.
- b. Adam Karpati, medical student, 1992-93.
- c. Eli Malus, 5 months, 1993 prior to medical school.
- d. Frederick Dankoff, Honours Immunology student spending 2 days per week in 1993-94.

5. DIDACTIC TEACHING:

- a. Medical and Surgical Grand Rounds at a McGill University Hospital at least once annually, lectures on various aspects of ongoing cancer therapeutics research.
- b. Housestaff Oncology Conferences, at least once yearly, topic: 'New Treatment Developments in Cancer'.
- c. Med II Nutrition Course # 524-202M Cancer and Nutrition, 1988-91, lecture entitled "The role of diet in cancer etiology and therapy".
- d. Med II Pharmacology and Therapeutics Course # 549-221M
  - 1991 - Cancer Chemotherapy
  - 1992 - Cancer Chemotherapy
  - 1993 - Cancer Chemotherapy and Immunosuppressive Drugs
  - 1994 - Cancer Chemotherapy and Immunologic Drugs
- e. Department of Pharmacology and Therapeutics, Graduate Seminar Course # 549-702A, "New Directions in Oncological Research", Co-Chairman

- f. Med I Biochemistry # 507-121M, Clinical correlates in cancer, February 1993, lecture entitled, "Laboratory and clinical aspects of human breast cancer".
- g. McGill Cancer Center, Public Lecture Series
  - 1989 - Cancer and Nutrition
  - 1990 - Unproven Cancer Treatments
  - 1991 - Cancer and the Media
- h. McGill Faculty of Medicine, "New Curriculum", Small Group Teaching Sessions, Pharmacology, September-November 1995-99.
- i. Surgical & Biomedical Research from the Bench to the Bedside, Course #519-605B, 2 hour lecture, March 4, 1996; March 5, 1997, March 29, 1999.

6. Ph.D. THESIS AND COMPREHENSIVE COMMITTEES:

- a. Ying Wang (Department of Pathology), June 1990
- b. Jonathan Bramson (Department of Medicine), December 1992
- c. Helene Flageole (Department of Surgery), June 1993
- d. Gordon Kirby (External at Guelph University) April 1991
- e. Julio Faria (Department of Medicine), August 1992
- f. Sylvain Letourneau, (Department of Medicine), June 1995
- g. Alain Daya (Department of Graduate Studies, Faculté de Médecine, Université de Montréal), March 1995
- h. Marie-France Pinard (Université de Montréal), May 1995

7. MENTOR, "CLINICIAN-SCIENTIST" TRAINEE

Jacques Galipeau MD, 1997-99

Victor Cohen MD, 2000, recipient of the Merck Frosst Canada Fellowship in Clinical Pharmacology, Canadian Association for Clinical Pharmacology

**OTHER CONTRIBUTIONS****PROFESSIONAL AFFILIATIONS:**

Member, American Association for Cancer Research

Fellow, American College of Nutrition

Member, Canadian Pharmacologic Society

Member, Canadian Society for Biologic Response Modifiers

Fellow, American College of Physicians

Member, Canadian Society of Medical Oncologists

**JOURNAL EDITORSHIP AND REVIEWS:**

Associate Editor, J. Cellular Pharmacology, Springer-Verlag

Editorial Board, Journal of Liposome Research, Marcel Dekker

Member, Montreal Gazette "Board of Contributors"

Ad hoc reviews for: Cancer Research, Journal of Biological Chemistry, Biochemical

Pharmacology, Journal of Clinical Oncology, Cancer Chemotherapy and Pharmacology

**GRANT REVIEWS:**

1985-88      National Cancer Institute of Canada Grants Panel

1987-89      Cancer Research Society Grants Panel

1991-      Scientific Advisory Committee, Israel Cancer Research Fund

1991      Site Visit Committee for FRSQ, Ste. Justine Hospital Research Institute

1993      National Cancer Institute of Canada, Molecular Epidemiology/Clinical  
Correlative Studies Panel

1993      Terry Fox Grant site review panel, National Cancer Institute



- 1993 Site visit Committee, Ontario Cancer Treatment & Research Foundation (Sunnybrook)
- 1993 Medical Research Council of Canada, Pharmacology & Toxicology Review Panel
- 1993-94 National Cancer Institute (USA), RFA Review Panel
- 1994-95 National Cancer Institute of Canada, Chairman Grants panel 'Pathology & Clinical Correlative Studies'
- 1994-97 Medical Research Council of Canada, Cancer Review Panel
- 1997- Chairman, Medical Research Council of Canada "Cancer B" grants panel 2000 NCI (USA) Insight Awards in Breast Cancer, grant review study section

ADVISORY COMMITTEE MEMBERSHIP:

**Hospital:**

- 1985-89 Montreal General Hospital Ethics Committee
- 1986-91 Pharmacy and Therapeutics Committee, Montreal General Hospital
- 1992- Academic Advisory Committee, Jewish General Hospital
- 1993 Scientific Advisory Board, Center for Clinical Epidemiology and Community Studies, Lady Davis Research Institute
- 1994 Strategic Planning Committee, Jewish General Hospital
- 1997 Search & Selection Committee for Director of Hematology, Department of Medicine
- 1999- Search and selection committee for new Director of Research, Jewish General Hospital
- 2000 Co-chair, Research Task Force, Strategic Planning, Jewish General Hospital

**University:**

- 1987 Co-principal Investigator, McGill Cancer Nutrition Study Group

- 1989 Dean's Search Committee, Department of Oncology Chairmanship
- 1989-92 Executive Committee, McGill Cancer Centre
- 1990 Parent Committee on Photodynamic Therapy, McGill University
- 1992 Radioresistance of Human Tumors Symposium, session chairman, McGill University, Chairman: in-vitro assays
- 1994 Dean's committee on reappointment of tenure track Assistant Professors
- 1994-95 Member, McGill University Senate
- 1997 Faculty Judge, Student Research Day, Faculty of Medicine, McGill
- 1998- Senate representative to the Statutory Selection Committee for Promotion to Full Professor in the Department of Pediatrics.
- 1998- Search and selection committee for Director of Pharmacology, Department of Oncology
- 1998 Ad hoc Tenure Review Committee, Faculty of Medicine
- 1999 Search and selection committee for Director of Palliative Care, MUHC and Department of Oncology

**Local and Provincewide:**

- 1988 Co-chairman, Reunion Inter-Hospitaliere en Oncologie Médicale de Montreal
- 1989 Advisor to 'Conseil de la sante de la region du Montreal' on cancer services
- 1991 Advisory Committee on Cancer, Quebec Health Ministry
- 1994-96 Quebec Provincial Cancer Network
- 1995-96 Vice-Chairman, Medical Oncology Examination Board, Collège des Médecins du Québec
- 1998-99 Membre, Comité consultatif sur the réseau du cancer, FRSQ

- 1999- Membre, FRSQ Groupe de travail sur l'évaluation de la performance des centres de recherche et de leurs chercheurs

**National and International:**

- 1986 Chairman, International Cancer Patients Solidarity Committee
- 1992- Phase I Working Group, National Cancer Institute of Canada
- 1993 Scientific Program Committee, 19th International Congress of Chemotherapy
- 1993 Working Group on "Natural history and molecular markers", National Forum on Breast Cancer
- 1995 International Oversight Committee, Israel Cancer Research Fund Biostatistical Centre
- 1996- International Scientific Council, Israel Cancer Research Fund
- 1996- Management Committee, Canadian Breast Cancer Research Initiative
- 1997 Member, Cell & Tumor Biology Subcommittee, Program Committee, American Association for Cancer Research 1997-98 meeting
- 1997 Organizing Committee, 3rd Canadian Gene Therapy Conference, June 1998.
- 1998 Chair, External Review of Research Program, Cancer Care Ontario, Ottawa Regional Cancer Centre.
- 1998 Member, Scientific Advisory Board, Les Laboratoires Aeterna
- 1999 Honourary Director, Canadian Magen David Adom for Israel
- 2000 Member, Investigational New Drug Committee Executive, National Cancer Institute of Canada
- 2000 Member, Research Subcommittee, Canadian Strategy for Cancer Control, Development Therapeutics

SPEAKING INVITATIONS:**Invited Speaker:**

- 1985 Gordon Research Conference on 'Chemotherapy and Experimental Therapeutics', New Hampshire
- 1985 Dana Farber Cancer Center, Boston, Visiting Lecturer, Research Seminar
- 1987 National Cancer Institute of Canada, Keynote speaker on Interface Research, Clinical Trials Group Meeting, Toronto
- 1989 National Institutes of Health Symposium on Multi-drug Resistance, Bethesda, Maryland
- 1990 Institut de Cancer de Montréal, Invited speaker, Research Seminar
- 1990 Centre Hospitalier Université Laval, Visiting Lecturer, Molecular Endocrinology Laboratory, Quebec City,
- 1990 Department of Chemistry, Visiting Professor, University of Guelph
- 1991 Ontario Cancer Treatment and Research Foundation, Kingston, Visiting lecturer
- 1991 Sherbrooke University MRC Radiobiology Group, Research seminar speaker
- 1992 Fox Chase Cancer Center, Philadelphia, Visiting Scientist
- 1992 San Antonio Breast Cancer conference, San Antonio, Texas
- 1992 Ontario Cancer Institute, Princess Margaret Hospital, Invited speaker
- 1992 Laboratory of Molecular Pharmacology, Institut de Cancer et d'immunologie, Université de Paris, Villejuif, Paris,
- 1992 San Antonio Breast cancer conference, San Antonio, Texas  
"Liposomal doxorubicin in the laboratory and in the treatment of breast cancer".
- 1993 Department of Pharmacology, Université de Montréal, Visiting lecturer
- 1993 Cancer Treatment Evaluation Program, NCI (USA), Phase I meeting.  
"A new model to study drug resistance both in-vitro and in-vivo".
- 1993 Canadian Society for the Weizmann Institute of Science, Breast Cancer Symposium,  
"Novel therapeutic approaches in cancer".

- 1993 National Cancer Institute of Canada, Annual Investigational New Drug meeting, keynote guest speaker, "New paradigms in anti-cancer treatment development".
- 1993 Fifth International Princeton Liposome Conference, Princeton University, "Liposomal doxorubicin in experimental and clinical breast cancer".
- 1993 British Columbia Cancer Control Agency, Visiting lecturer. "The role of cellular environment in drug resistance".
- 1995 American Cancer Society Symposium on Novel Therapeutics, Michigan State University. "Novel experimental and therapeutic approaches the tumor resistance to chemotherapy".
- 1995 Third Annual Research Day, Department of Pharmacology, McGill University "Approaches to chemotherapy resistance to chemotherapy".
- 1996 McGill Head and Neck Surgery Retreat, "Review of Novel Therapeutics in Squamous Cancers of the Head & Neck".
- 1996 University of Maryland Cancer Centre Visiting lecturer, "Glutathione modulation in cancer risk and therapy".
- 1996 International Symposium on Glutathione and related Enzymes, "Selective modulation of GSH in the laboratory and in the clinic". Hilton Head, S.C.
- 1997 Canadian Biotechnology Conference, "Lipid-based carrier systems in cancer therapy", Nesbitt Burns Inc., Toronto
- 1997 2nd Canadian MDR Roundtable, "Glutathione and related pathways in drug resistance", Toronto, March 1997.
- 1997 Manitoba Institute for Cell Biology, Keynote address at annual retreat, "Translational research; the next step", November.
- 1998 McGill University Career Day in Pharmacology, "Pharmacology in the Clinical Setting", April, 1998.
- 1998 3rd Canadian Gene Therapy Conference, Controversies and "Progress in Suicide Gene Therapy", June 1998.

**Grand Rounds:**

- 1988 New England Deaconess Hospital, Boston, Medical Grand Rounds, "Therapeutic approaches to chemotherapy resistance".
- 1990 Royal Victoria Hospital, Medical Grand Rounds, "Drug resistance in the laboratory and in the clinic".
- 1990 Royal Victoria Hospital, Surgical Grand Rounds, "Experimental therapeutics at McGill Oncology".
- 1990 St. Mary's Hospital, Psychiatry Grand Rounds, "Unproven cancer therapies".
- 1991 Montreal General Hospital, Medical Grand Rounds, "Chemotherapy resistance in the laboratory and in the clinic".
- 1993 Jewish General Hospital, Surgical Grand Rounds, "Experimental Cancer Therapeutics".
- 1995 Royal Victoria Hospital, Oncology Research Seminar, "Use of glutathione transferase in gene therapy".

**Symposium Participation:**

- 1984 NIH symposium on A Strategies for the Development of Selenium as an Anticancer Agent, Bethesda
- 1986 International symposium on "The Role of Selenium in Biology and Medicine", Trier, Germany
- 1990 Frontiers in Medical Biochemistry, McGill University
- 1990 Terry Fox Workshop, "Molecular Biology of Sarcomas", London, Ontario
- 1991 Molecular Genetics Workshop, McGill University, Department of Oncology
- 1991 Canadian Federation of Biologic Sciences, 'Drug Resistance' symposium, Kingston
- 1992 Resistance Modulator Workshop (Hoffman LaRoche International) Salt Spring Island, British Columbia
- 1992 Terry Fox Workshop on Breast Cancer, Clinical-Laboratory Interface; Mechanisms of Drug Resistance, Niagara Falls

- 1993 New Directions in Cancer Research, National Cancer Institute of Canada, Symposium to Honour P.Scholfield
- 1993 Chemotherapy Foundation Symposium, Innovative Cancer Chemotherapy for Tomorrow, Mount Sinai Hospital, "Liposomal doxorubicin in breast cancer therapy", New York
- 1995 S. Aisenstadt Clinical Day, Sir Mortimer B. Davis-Jewish General Hospital  
"Approaches to chemotherapy resistance in the lab and in the clinic".
- 1996 Hope and Cope-Sir Mortimer B. Davis Jewish General Hospital, "Cancer Answers" Series, "When Experts Disagree".
- 1997 Chemotherapy Foundation Symposium, Innovative Cancer Therapy for Tomorrow, "Lipid-based delivery systems in cancer therapeutics", New York, November.
- 1997 Canadian Breast Cancer Initiative Symposium, "Research Gaps in Breast Cancer", Health Canada, Ottawa, November.
- 1997 Chair, Organizing Committee, "Biomedical Ethics: A Symposium to Honour the Memory of Dr. Benjamin Freedman", December 16.
- 1998 Invited speaker, ALCASE lung cancer symposium, "Role of angiogenesis inhibitors in lung cancer therapy", Durham N.C. October.
- 1998 CAPRA, Canadian Association of Pharmaceutical Regulatory Affairs, "Novel paradigms in cancer therapy development", Toronto, November.
- 1998 Chemotherapy Foundation Symposium, Innovative Cancer Therapy for Tomorrow, "Antiangiogenesis in cancer therapy", New York, November.
- 1998 San Antonio Breast cancer conferenc, "Liposomal doxorubicin in the laboratory and in the treatment of breast cancer", December, San Antonio, Texas
- 1999 First International Symposium on Anti-angiogenic Agents, "Biological and clinical activity of AE-941", January, Dallas, Texas.
- 1999 Innovation Québec, Medical Research & Technology Symposium, Columbia Presbyterian Hospital Centre, "Tranlational research in cancer: The necessary lab, clinic & industry interface", New York, April, 1999.
- 1999 Chair, Canadian Association of Medical Oncologists, Symposium on Genes and Vaccines, April 1999.

- 1999 Chair, Plenary Session on Treatment, Quality of Life, Ethical Issues, Reasons for Hope Symposium, Canadian Breast Cancer Research Initiative, Toronto.
- 1999 Chair, Translational Research Session, Reasons for Hope Symposium, Canadian Breast Cancer Research Initiative, Toronto.

## RESEARCH

### RESEARCH GRANTS AND AWARDS:

- 1986-91 Scholar, Medical Research Council of Canada
- 1987-90 Medical Research Council of Canada, operating grant together with Dr. S. Lehnert, 'Radiobiology of drug resistant human tumor sub-lines', \$45,000/year
- 1987-90 Cancer Research Society, operating group grant to support McGill University Cancer/Nutrition Study Group, 'Role of dietary constituents on normal tissue sensitivity to carcinogens and to anti-cancer therapy', \$85,000.00/year
- 1989-91 Cancer Research Society, operating grant, 'Molecular cloning and characterization of gene(s) involved in Ilyator DNA cross-link removal', \$40,000/year
- 1985-87 National Cancer Institute of Canada, operating grant, 'Detoxifying enzymes in tumor drug resistance', \$40,000/year
- 1987-90 National Cancer Institute of Canada, renewed grant, \$52,000/year
- 1990-93 National Cancer Institute of Canada, renewed grant, \$90,000/year
- 1993-96 National Cancer Institute of Canada, renewed grant, \$100,000/year
- 1991-93 Cancer Research Society, operating grant, 'Biology of Buthionine Sulfoximine Stereoisomers', \$30,000/year
- 1991-96 Fonds de la Recherche en Sante du Quebec, Chercheur-Boursier Merite Exceptionel
- 1993-96 National Research Council, Drug Discovery Project (M. Jamali, P.I.) \$100,000/year.
- 1993-95 Cancer Research Society, renewed grant, \$38,000/year



1995-97 Ibid, \$45,000/year

1994-97 National Cancer Institute of Canada, operating grant, 'Phase I study of Buthionine sulfoximine with biological endpoints', \$70,000/year

1997-2000 National Cancer Institute of Canada, (renewal)"Role of Glutathione in cancer treatment and prevention"ibid, \$110,000/year

1992-95 Medical Research Council of Canada, 'Mechanistic studies of novel anthracyclines', \$75,000/year

1994-96 FRSQ, Quebec Provincial Cancer Network, \$30,000/year

1996-2000 Ibid, \$25,000/year

1995-98 National Cancer Institute of Canada, operating grant, >Gene targeted pharmacotherapy=, \$100,000/year

1998-2001 Ibid, \$86,000/year

1995-99 National Science and Engineering Research Council, "Optimizing Gene Targeted Pharmacotherapy" (strategic Group Grant, G. Batist P.I.), \$1,150,000.00

1996-97 Canadian Breast Cancer Research Foundation, "Environmental Chemical Breast Carcinogenesis", \$30,000.00.

1997 Medical Research Council of Canada, Workshop Support: Biomedical Ethics conference.

1998 National Institutes of Health (USA), Phase I study of SarCNU (L. Panasci, P.I.), \$50,000.

1998-2001 National Cancer Institute of Canada, operating grant, "Gene targeted pharmacotherapy", renewed, \$85,000/year

1999-2002 National Cancer Institute of Canada, new operating grant, "The cellular and molecular basis of squamous cell carcinoma of the head and neck in those with low exposure to tobacco and alcohol", William Foulkes (Principal Investigator), M. Alaoui-Jamali, G. Batist, 1999/2000: \$ 140,769, 2000/2001: \$ 103,600, 2001/2002: \$ 56,800

2001 AstraZeneca (US), "Studies of the effects of EGFr kinase inhibitors on individual heterodimers of the Her receptor family proteins". M. Jamali, G. Batist. \$50,000.

- 2002 Canadian Fund for Innovation, \$3M dollars to establish the "Montreal Centre for Experimental Therapeutics in Cancer" (matched funds from FRSQ, plus additional \$1.5M from other sources), Scientific Director.

AWARDS FOR TRAINEES:

- 1987-89 Cancer Research Society, research fellowship to support PhD student R. Schechter
- 1986-90 Cancer Research Society research fellowship, Kamilia Ishak
- 1991-93 Medical Research Council of Canada Fellowship, N. Brasseau
- 1991-94 Canderel-McGill Postdoctoral fellowship, G. Kirby
- 1991-92 Montreal General Hospital Research Institute Award, M. Jamali
- 1993-95 Medical Research Council of Canada Fellowship, G. Kirby
- 1992 Prix Armand Frappier, Quebec Lung Association, M. Alaoui-Jamali
- 1993 International Cancer Technology Transfer Fellowship, UICC, G. Kirby
- 1993 Chercheur-boursier, FRSQ, Moulay Jamali
- 1995-2000 Cancer Research Society Studentship, Maha Katabi
- 1997-98 Gerald Clark Cancer Research Fellowship, LDI, Xiang Chen
- 1998 Young Investigator Award, American Association for Cancer Research, Joseph Caruso
- 1998 Challenge >98 Program, Development Canada, Research Assistant Mr. M. Markus
- 1998-2000 Faculty Studentship Award, Département de Pharmacologie, Université de Montréal, Caroline Trudeau
- 2000- Merck Frosst Canada Fellowship in Clinical Pharmacology, Canadian Association for Clinical Pharmacology, Victor Cohen
- 1999 American Association for Cancer Research Young Investigator Scholar Award, Nasser Fotouhi-Ardakani

CONTRACTS: (Principle investigator\* or McGill University Representative)

- 1990-91 IAF Biochem. New drug screening project, \$40,000. Renewed: 1992-94, \$100,000\*
- 1990-92 The Liposome Company, Princeton, Phase II study of Liposomal Dox., \$67,000\*
- 1990-92 Hoffman LaRoche, Phase I-II Study of 5FU plus leucovorin plus interferon alpha, \$80,000\*
- 1990-92 Hoffman LaRoche (International) Phase III study of 5FU plus leucovorin vs 5FU plus interferon alpha in metastatic colon cancer, \$50,000
- 1990-92 Ciba-Geigy, Phase I study of MTP-PE in combination with 5FU and leucovorin, \$70,000\*
- 1990-91 Ciba-Geigy, Phase II study of 10-Edam in non-small cell lung cancer, \$120,000\*
- 1991-92 Schering/Lederle, Phase I study of Dose escalated mitoxantrone with GM-CSF, 1991-92, \$60,000\*
- 1993-94 Pfizer (USA), Comparative trial of liposomal vs free doxorubicin, \$120,000\*
- 1995- Pfizer, Phase II study of Liposomal Doxorubicin vs, free Doxorubicin in combination with cyclophosphamide in the treatment of breast cancer, including pharmacokinetics, \$250,000\*.
- 1991-93 National Cancer Institute (USA), Investigational Drug Branch, Bethesda. Phase I study of Buthionine sulfoximine plus radiotherapy\* , funded by NCI-C grant
- 1993-95 National Cancer Institute (USA), Investigational Drug Branch, Bethesda. Phase II study of BSO plus melphalan in metastatic melanoma that can be serially biopsied\*
- 1995- Pfizer Pharmaceutical, Phase II study of Liposomal Doxorubicin in combination, \$150,000\*.
- 1995 Chirosciences Inc., Cambridge, U.K. Development of Dextro-Ifosfamide, laboratory and clinical studies, \$75,000\*.
- 1996-97 Inex Pharmaceutical, Vancouver, Phase II trials of Liposomal Vincristine, \$100,000\*.

- 1997 Chirosciences Inc., Cambridge, U.K. Development of Methylene Blue plus Ifosfamide, laboratory and clinical studies, \$125,000.\*
- 1997 Zeneca Pharma, Phase I study of Tomudex & Gemcitabine, \$45,000\*.
- 1997 The Liposome Company, Studies of D-99 efficacy and pharmacology, \$150,000.\*
- 1997- Les Laboratoires Aeterna Phase I/II study of AE-941, an extract with antiangiogenesis activity, \$100,000.
- 1998- Les Laboratoires Aeterna Phase II study of AE-941 in patients with advanced cancer receiving chemotherapy, \$100,000.\*
- 1997 Vertex Pharmaceuticals, Phase II study with pharmacokinetics of VX-710, a drug resistance modifier, in patients with metastatic breast cancer resistant to taxol.
- 1997 National Cancer Institute of Canada, Clinical Trials Group, Co-Principle Investigator of Atrial of high dose Taxol with or without Ifosfamide in Metastatic Breast Cancer Patients.
- 1998 Biochem Pharma, Phase II study with pharmacokinetics of VX-710, a drug resistance modifier, in patients with advanced ovarian cancer resistant to taxol\*.
- 1999 Inex Pharmaceuticals. Phase I study of c-Myc antisense oligonucleotide in advanced cancer and leukemia\*. (protocol in development).
- 1999 Schering Plough Research Institute, Phase II study of Ad-P53 gene therapy in metastatic colorectal cancer. \$200,000.
- 2000 NCI-C, Phase I Study of ZD1839, and EGFr kinase inhibitor, in solid tumors.
- 2000 Immuno Designed Molecules, Paris, Research development program in cellular immunotherapy, including construction of GLP "salle blanche" for clinical trials (>\$400,000 for construction and equipment, in addition to shared cost for personnel plus access for investigator-initiated research projects).

PATENTS:

1. International Patent Application - earlier filing August 13, 1998  
"Use of the Enantiomers of Ifosfamide in Antitumor Therapy for Reducing Side Effects"  
PATENT/COPYRIGHT #: AU695347 COUNTRY: US  
Inventors: Helen Frances Baker, Irving William Wainer, Gerald Batist, Julie Ducharme, Camille Pierre Granvil  
  
Description: The R-Ifosfamide stereoisomer retains the anti-tumor activity of the racemic Ifosfamide, and is likely to be less neurotoxic.
2. International Patent Application - earlier filing September 22, 1997  
"HEX II Tumor-Specific Promoter and uses Thereof in Cancer Therapy"  
PATENT/COPYRIGHT #: CA97/00691 COUNTRY: US  
Inventors: G. Batist and M. Katabi (McGill OTT, standard)  
  
Description: The invention relates to a novel tumor-specific promoter for use in gene targeted therapy that is differentially regulated in cancer cells, such as to drive a suicide gene.
3. International Patent Application - earlier filing October 13, 1998  
"Pharmaceutical Composition of Glutathione Modulators With Antimony and/or Arsenic for Cancer Therapy"  
PATENT/COPYRIGHT #: CA98/0102 COUNTRY: US  
Inventors: W. Miller, G. Batist, K. Davison  
  
Description: First identification of the potentiation effect of glutathione depletion on antimony as well as arsenic in anticancer therapy.
4. International Patent Application - earlier filing November 5, 1998  
"Novel Derivatives with Anti-Cancer Activity"  
PATENT/COPYRIGHT #: CA98/01035 COUNTRY: US  
Inventors: M.A. Alaoui-Jamali, G. Batist, L. Zamir  
  
Description: Derivatives extracted from a naturally growing plant with potent anti-tumor and anti-metastatic properties in vivo.
5. International Patent Application - earlier filing November 5, 1998  
"Analogues of Vitamin E"  
PATENT/COPYRIGHT #: CA98/01036 COUNTRY: US  
Inventors: M.A. Alaoui-Jamali, G. Batist, T. Wong, P. Arya, G. Burton (McGill OTT, standard)  
  
Description: Novel water soluble analogues of Vitamin E with tumor static properties.

6. International Patent Application - filing in process  
"Antineoplastic Isolated and Purified Extract from Achillea Millefolium"  
PATENT/COPYRIGHT #: ? COUNTRY: US  
Inventors: P. Ghadirian, G. Batist  
Description: Isolation of new molecules with potent anti-cancer activity.

#### LIST OF PUBLICATIONS

1. Newman EB, Batist G, Fraser J, Isenberg S, Weyman P, Kapoor V. The use of glycine as nitrogen by Escherichia coli K12. *Biochim. Biophys. Acta* 421:97-105, 1976.
2. Batist G, Andrews J. State of the Art; Pulmonary toxicity of antineoplastic drugs. *JAMA* 246:1449-53, 1981.
3. Batist G, Bistrian BR, D'Elia J. Intravenous TPN in diabetic renal failure. *Nephron* 28:244-48, 1981.
4. Grace M, Batist G. Aorticopulmonary paraganglioma and gastric leiomyosarcoma in a young woman. *Am. J. Med.* 70:1288-92, 1981.
5. Batist G, Blaker M. Coronary bypass surgery in juvenile onset diabetes. *Am. Heart Journal* 106:51-55, 1983.
6. Kawamura I, Moldower R, Bistrian BR, Batist G, Blackburn GL. Amino acid kinetics in tumor-bearing hosts. *Cancer Res.* 41:841-48, 1982.
7. Batist G, Ihde DC, Zabel A, Bunn PA, Glatstein E. Small cell carcinoma of lungs. Reinduction therapy after late relapse. *Ann. Int. Med.* 98:472-476, 1983.
8. Wensel R, Batist G. Implications of rapid uniform density changes on hepatic CT. *CT Journal of Computed Tomography* 7:209-14, 1983.
9. Batist G, Bothe A, Bern MM. Low antithrombin III in morbid obesity; return to normal with weight reduction. *J. Parent. Enter. Nutr.* 7:447-49, 1983.
10. Bern MM, Bothe A, Bistrian BR, Batist G, Blackburn GL. The effects of low-dose coumadin on antithrombin III levels in morbid obesity. *Surgery* 94:78-83, 1984.
11. Batist G, Norton R, Ferrans B, Katki A, Myers CE. Selenium dependence of human glutathione peroxidase: Results of a prospective randomized trial. *Cancer Res.* 45:5900-03, 1985.

12. Batist G, Klecker RF, Grygiel J, Collins JF. Phase I and pharmacokinetics of tiazofurin. In. New Drugs 3:349-355, 1985.
13. Curt GC, Kelly R, Fine R, Batist G, Collins J. Phase I and pharmacokinetics of dihydroazacytidine (DHAC). Cancer Res. 45:3359-63, 1985.
14. Hamilton T, Winkler C, Louie K, Batist G, Behrens BC, Tsuruo Y, Young YC, Ozols RF. Augmentation of adriamycin, melphalan, cisplatin cytotoxicity in drug-resistant and sensitive human ovarian carcinoma cell lines by glutathione depletion. Biochem. Pharm. 34:2583-86, 1985.
15. Myers CE, Zweier L, Gianni L, Batist G, Sinha BK, Miundi J, Klecker RF, Yeh G. The mechanism of adriamycin in tumor cell kill. UCLA Symposium on Molecular and Cellular Biology. Symposium Proceedings, Leukemia, 1985, 537-546, Alan R. Liss, Publishers.
16. Batist G, Raynaud A, Katki AG, Myers CE. Enzymatic defense against radiation-induced lipid peroxidation: Effect of selenium and vitamin E dietary depletion in mice. Biochem. Pharm. 35:601-606, 1986.
17. Batist G, Katki AG, Klecker RF, Myers CE. Growth inhibition of human leukemia cells by selenium: Interaction with reduced glutathione. Cancer Res. 46:5482-5485, 1986.
18. Batist G, Ihde DC, Carney D, Cowen KH, Bunn PA. Etoposide and cisplatin in relapsed small cell lung cancer: Clinical and in-vitro correlations. J. Clin. Oncol. 4:982-986, 1986.
19. Batist G, Katki AG, Myers CE. Role of selenium in cancer therapy. 'Workshop on strategies to develop selenium compounds as chemopreventive agents'. J. Am. Coll. Toxic. 5:87-93, 1986.
20. Batist G, Behrens BC, Hamilton T, Katki AG, Louie K, Myers CE, Ozols RF. Serial determinations of glutathione and glutathione-related enzyme activities in human tumor cells in-vitro. Biochem. Pharm. 35:2257-2258, 1986.
21. Batist G, Myers CE, Sinha BK, Katki AG, Cowan K. Overexpression of a novel glutathione-S-transferase in multidrug resistant human breast cancer cells. J. Biol. Chem. 261:15544-49, 1986.
22. Cohen J, Lyon R, Chen G, Faustino P, Batist G, Shoemaker M, Cowan KH, Rubalcaba E. Differences in phosphocreatine levels in drug sensitive and resistant cell lines in <sup>31</sup>P NMR spectroscopy. Cancer Res. 46:4087-4090, 1986.

23. Cowan KH, Batist G, Tulpule A, Sinha BK, Myers Ce. Similar biochemical changes associated with multidrug resistance in human breast cancer cells and carcinogen-induced resistance to xenobiotics. Proc. Natl. Acad. Sci. 83:9328-9332, 1986.
24. Sinha BK, Batist G, Katki AG, Myers CE. Adriamycin stimulated hydroxyl radical formation in human breast cancer cells. Biochem. Pharm. 36:793-796, 1987.
25. Sinha BK, Batist G, Katki AG, Myers CE. Differential hydroxyl radical production in sensitive and resistant human breast cancer cells. Biochemistry 26:8705-12, 1988.
26. Batist G, Mekhail-Ishak K, Hudson N, Demuys JM. Interindividual variation in phase II detoxification enzymes in normal human colon mucosa. Biochem. Pharm. 37:4241-4243, 1988.
27. Tsao M-S, Batist G. Induction of gamma-glutamyl transpeptidase activity by all-trans retinoic acid in cultured rat liver epithelial cells. Biochem. Biophys. Res. Commun. 157:1039-1045, 1988.
28. Batist G, Selenium: Preclinical studies to determine anti-cancer potential. Biol. Trace Elem. Res. 15:223-229, 1988.
29. Bounous G, Batist G, Gold P. Immunoenhancing property of dietary whey protein in mice; role of glutathione. J. Clin. Exp. Med. 12:154-161, 1989.
30. Lehnert S, Greene D, Batist G. Radiation response of drug-resistant variants of human breast cancer cells. Radiation Res. 118:568-580, 1989.
31. Lehnert S, Greene D, Batist G. Radiation response of drug-resistant variants of a human breast cancer cell line: the effect of glutathione depletion. Radiation Res. 124:208-215, 1990.
32. Tsao M-S, Shepherd J, Batist G. Phenotypic expression in spontaneously transformed cultured rat liver epithelial cells. Cancer Res. 50:2048-2054, 1990.
33. Bounous G, Gervais R, Amer V, Batist G, Gold P. The influence of dietary when protein on tissue glutathione and the diseases of aging. J. Clin. Exp. Med., 12:343-349, 1989.
34. Tsao M-S, Batist G. Glutathione and glutathione-S-transferase in clones of cultured rat liver epithelial cells that express varying activity of gamma-glutamylcysteine synthetase. Molec. Carcinogenesis 2:144-149, 1989.
35. Batist G, Torres-Garcia S, DeMuys M, Greene D, Lehnert S, Rochon M, Panasci L. Enhanced cross-link removal: the apparent mechanism of resistance in a clinically



- relevant melphalan resistant human breast cancer cell line. Molec. Pharm. 36:224-230, 1989.
36. Schiffman MH, Van Tassell RL, Robinson A, Smith L, Batist G, Block G, Wilkins TD. A case-control study of colorectal cancer and fecal mutagenicity. Cancer Res. 49:1322-1326, 1989.
  37. Batist G, Malashenko E, Mersereau W, Chiu RCJ. Role of free radical metabolizing enzymes in cardiac ischemic injury. Circulation 80:10-13, 1989.
  38. Mekhail-Ishak K, Medina DC, Batist G. Biochemical properties of normal lactating, preneoplastic, and neoplastic breast tissue in mice. Carcinogenesis 10:2363-2366, 1989.
  39. Mekhail-Ishak K, Hudson N, Batist G. Drug metabolizing enzymes in human colonic carcinoma: implications for therapy. Cancer Res. 49:4866-4869, 1989.
  40. Schiffman MH, Andrews AH, Van Tassell R, Daniel James, Robinson A, Hoover RN, Weil R, Nair PP, Schwartz S, Batist G, Shaw R, Wilkins TD. A case control study of colorectal carcinoma and fecal mutagenicity. Cancer Res. 49:3420-3424, 1989.
  41. Skalski V, Yarosh DB, Batist G, Gros P, Feindel W, Kopriva D, Panasci LC. Mechanisms of resistance to (2-Chloroethyl)-3-Sarcosinamide-1-Nitrosourea (SarCNU) in sensitive and resistant human glioma cells. Molec. Pharm. 38:299-305, 1990.
  42. Dmitrovsky E, Seifter E, Gazdar A, Tsai CM, Edison M, Brentley P, Veach S, Batist G, Ihde D, Mulshine J. A phase II trial of carboplatin (CBDCA) in small and non-small cell lung cancer with correlation to in-vitro analysis of cytotoxicity. Am. J. Clin. Oncol. 13:285-289, 1990.
  43. Alaoui-Jamali M, Batist G, Lehnert S. Radiation-induced damage to DNA in drug and radiation-resistant sublines of a human breast cancer cell line. Radiation Res. 129:37-42, 1992.
  44. Batist G, Greene D, Woo A, Lehnert S. Glutathione depletion in multi-drug resistant human breast cancer cells. Biochem. Pharm. 41:631-635, 1991.
  45. Shecter R, Woo A, Batist G. A model to examine the in-vivo/in-vitro resistance of drug resistance. Cancer Res. 51:1434-42, 1991.
  46. Batist G, Tsao M-S. Effect of proliferative state on Glutathione-S-transferase isoenzyme expression in cultured rat liver epithelial cells. Carcinogenesis, 12:2031-2034, 1991.
  47. Bounos G, Batist G, Gold P. The anti-carcinogenesis potentials of whey protein. Cancer Letters, 57:91-94, 1991.

48. Alaoui-Jamali M, Lehnert S, Batist G. Radiation-induced damage to DNA in drug and radiation resistant breast cancer cell lines. Radiation Res. 129:37-42, 1992.
49. Batist G, Schechter R, Alaoui-Jamali M. Role of glutathione S-transferase in chemotherapy resistance and in carcinogenesis. J. Biochem. and Cell. Biol. 70:349-353, 1992.
50. Batist G, Schechter R, Courmoyer D. Glutathione S-transferase in human and rodent bone marrow. Cell. Pharm. 1:153-157, 1994.
51. Trudeau M, Batist G, Mulder D, Boos G. Ara-C and Platinol as neoadjuvant chemotherapy for resectable oesophageal cancer. J. Surg. Oncol. 50:118-120, 1992.
52. Alaoui-Jamali M, Panasci L, Centurioni GM, Lehnert S, Batist G. Nitrogen mustard-DNA interactions in melphalan-resistant mammary carcinoma cells. Cancer Chemother. Pharm. 30:341-347, 1992.
53. Asao T, Shibata H, Batist G, Brody P. Eradication of hepatic metastases of carcinoma H-59 by combination chemo-immunotherapy with liposomal muramyl-tripeptide, 5-fluorouracil, and leucovorin. Cancer Res. 52:6254-6257, 1992.
54. Woo A, Tsao MS, Batist G. Drug resistance in cultured rat liver epithelial cells spontaneously and chemically transformed. Carcinogenesis, 13:1675-1677, 1992.
55. Alaoui-Jamali M, Schechter R, Lehnert S, Batist G. High tolerance and efficacy of intravenous DMDP to overcome P-glycoprotein-related drug resistance. J. Pharm. Exp. Therapeut. 264:93-98, 1993.
56. Zhang X, Wang T, Batist G, Tsao M-S. Transforming growth factor-1 promotes spontaneous transformation of cultured rat liver epithelial cells. In Press, Cancer Research 54:6122-6128, 1994.
57. Lehnert S, Alaoui-Jamali M, Batist G, Alaoui-Jamali M. Factors influencing human tumor radioresistance. J. Chim. Phys. 91:1161-1175, 1994. In Press, 1994.
58. Schechter R, Alaoui-Jamali M, Batist G. Expression of glutathione S-transferase YcCDNA in mammary carcinoma cells. Cancer Res. 53:4900-4911, 1993.
59. Trudeau M, Zukiwski A, Langleben A, Boos G, Batist G. Phase I study of escalating interferon  $\alpha$ -2a combined with 5FU and leucovorin in gastrointestinal cancer. Acta Oncologica, 32:537-539, 1993.

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61. Alaoui-Jamali M, Loubaba B, Schecter R, Tapiero H, Batist G. Effect of DNA repair enzyme modulators on cytotoxic effects of L-phenylalanine and cisplatin in mammary carcinoma cells resistant to alkylating drugs. Cancer Chemo. Pharm. 34:153-158, 1994.
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67. Trudeau M, Zukiwski A, Batist G. Phase I study of r-Human Interferon Alpha-2b combined with 5-Fluorouracil and Cisplatin in patients with advanced cancer. In Press, Cancer Chemo. Pharm. 35:496-500, 1995.
68. Corfu-A Study Group. Phase III randomized study of two Fluorouracil combinations with either Interferon alfa-2a or Leucovorin for advanced colorectal cancer. J. Clin. Oncol. 13:921-928, 1995.
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70. Bramson J, McQuillan A, Aubin R, Alaoui-Jamali M, Batist G, Christodouloupoulos G, Panasci LP. Nitrogen mustard drug resistant B-cell chronic lymphocytic leukemia as an in vivo model for crosslinking agent resistance. Mutation Res. 336:269-278, 1995.

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72. Wang T, Griffith OW, Alaoui-Jamali M, Batist G. Differential biologic effects of Buthionine sulfoximine diastereomers in rat mammary carcinoma cell lines. Cellular Pharmacology, 2:237-240, 1995.
73. Baruchel S, Batist G, Wong T. In vivo selective modulation of tissue glutathione in rat mammary carcinoma model. Biochem. Pharm. 50:1505-1508, 1995.
74. Alaoui-Jamali M, Wang T, Chen DZX, Mayer L, Batist G. Effects of tumor grafts on doxorubicin host toxicity. Cell. Pharm. 2:29-33, 1995.
75. Wang T, Chen X, Schechter RL, Baruchel S, Alaoui-Jamali M, Melnychuk D, Batist G. Modulation of Glutathione by a Cysteine Pro-drug selectively enhances tumor response to melphalan. J. Pharm. Exp. Therap. 276:1169-1173, 1996.
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84. Caruso JA, Emond J, Batist G. Benzo(a)pyrene-induced early transformation of human mammary epithelial cells is associated with abnormalities of chromosomes 5 and 8 and increased c-myc expression. Mutation Research, In Press.
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91. Carystinos GC, Katabi M, Laird D, Chan H, Jamali M, Batist G. Chemical induction of gap junction intercellular communication increases bystander effect in Adenoviral suicide gene therapy. Clin. Cancer Res. 5:61-68, 1999.
92. Caruso JA, Batist G. Cross-talk between Ah receptor and estrogen receptor in breast cancer cells. Biochem. Pharm. 58:1395-1403, 1999.

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